PRELIMINARY CLAIMS

1. A volume measuring device for measuring a volume of gas within a vessel, the device being arranged to:

produce a continuous change in the volume of the gas;

measure the rate of change of pressure of the gas with respect to the volume by determining incremental changes if volume throughout the change in volume, and measuring incremental pressure changes associated with respective volume changes, or work done during respective volume changes;

use the measurements to determine a straight line relationship;

and determine the volume of the gas from the volume changes and either the pressure changes or work done.

2. A device according to claim 1 including a piston arranged to produce the change in volume of the gas in a single stroke.

3. A device according to claim 1 or claim 2 including a pressure sensor arranged to measure the incremental pressure changes.

4. A device according to claim 3 arranged to estimate a best fit straight line relationship from the measurements.

5. A device according to claim 3 or claim 4 wherein the straight line relationship includes first and second derivatives.

6. A device according to any claims 3 to 5 arranged to determine the volume from an intercept of the straight line relationship.

7. A device according to any foregoing claim including a piston arranged to produce the continuous change in volume.

8. A method of measuring a volume of gas within a vessel, the method comprising:

producing a continuous change in the volume of the gas;

measuring the rate of change of pressure of the gas with respect to the volume by determining incremental changes if volume throughout the change in volume, and measuring incremental pressure changes associated with respective volume changes, or work done during respective volume changes;

using the measurements to determine a straight line relationship;

and determining the volume of the gas from the volume changes and either the pressure changes or work done.

9. A method according to claim 8 wherein the gas is part of a di-phasic mixture.